

SEQUENCE LISTING

<110> DAICEL Chemical Industries LTD.

<120> Novel (R)-2,3-butanediol dehydrogenase

<130> D1-A0009

<140>

<141>

<150> JP 2000-333363

<151> 2000-10-31

<160> 17

<170> PatentIn Ver. 2.1

<210> 1

<211> 1143

<212> DNA

<213> Pichia angusta

<400> 1

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acggacttga aagaattcac atattctgg a ggtcctgttt tttccctaa acaaggcacc 180
aaggacaaga ttccggata cgaacttcct ctctgtcctg gacatgaatt tagcggaacg 240
gtggtcgagg ttggctctgg tgtcacaagt gtgaaacctg gtgacagagt cgccgttgaa 300
gctacgtcg attgctccga cagatcgccg tacaaggaca cggtcgccc agacccggg 360
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ttgggtggtg ccagccgggg ttttgcggag tacgtcggtt acggtgagga ccacatggc 480
aagctgccag actcgattcc cgacgatatt ggagcaactgg ttgagcctat ttctgttgcc 540
tggcatgtg ttgaacgcgc tagattccag cctggtcaga cggccctgg tcttggagga 600
ggtcctatcg gccttgcac cattcttgcgat ctgcaaggcc atcatgcggg caaaattgtg 660
tggccgagc cggccttgat cagaagacag tttgcaaaagg aactggccgc tgaagtgttc 720

gatccttcta catgtgacga cgcaaattgt gtttcaagg ctatgggcc ggagaacgag 780
 ggattccatg cagccttoga ctgtctgggt ttccctcaga cattcaccac ctcaatttgc 840
 gccacgggac cttctggaa cggcgtaat gtggcggtt ggggagacca cccaaatttgg 900
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 gtcaaggact tccaggaatgt tgcaggcc ttggaaatgt gtctcatatc ttggacaaa 1020
 gcgcgcaaga tgattacagg caaagtccac ctaaaggacg gagtcgagaa gggctttaaa 1080
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 taa 1143

<210> 2

<211> 380

<212> PRT

<213> *Pichia angusta*

<400> 2

Met Lys Gly Leu Leu Tyr Tyr Gly Thr Asn Asp Ile Arg Tyr Ser Glu
 1 5 10 15

Thr Val Pro Glu Pro Glu Ile Lys Asn Pro Asn Asp Val Lys Ile Lys
 20 25 30

Val Ser Tyr Cys Gly Ile Cys Gly Thr Asp Leu Lys Glu Phe Thr Tyr
 35 40 45

Ser Gly Gly Pro Val Phe Phe Pro Lys Gin Gly Thr Lys Asp Ile
 50 55 60

Ser Gly Tyr Glu Leu Pro Leu Cys Pro Gly His Glu Phe Ser Gly Thr
 65 70 75 80

Val Val Glu Val Gly Ser Gly Val Thr Ser Val Lys Pro Gly Asp Arg
 85 90 95

Val Ala Val Glu Ala Thr Ser His Cys Ser Asp Arg Ser Arg Tyr Lys
 100 105 110

Asp Thr Val Ala Gin Asp Leu Gly Leu Cys Met Ala Cys Gin Ser Gly
 115 120 125
 Ser Pro Asn Cys Cys Ala Ser Leu Ser Phe Cys Gly Leu Gly Gly Ala
 130 135 140
 Ser Gly Gly Phe Ala Glu Tyr Val Val Tyr Gly Glu Asp His Met Val
 145 150 155 160
 Lys Leu Pro Asp Ser Ile Pro Asp Asp Ile Gly Ala Leu Val Glu Pro
 165 170 175
 Ile Ser Val Ala Trp His Ala Val Glu Arg Ala Arg Phe Gin Pro Gly
 180 185 190
 Gin Thr Ala Leu Val Leu Gly Gly Pro Ile Gly Leu Ala Thr Ile
 195 200 205
 Leu Ala Leu Gin Gly His His Ala Gly Lys Ile Val Cys Ser Glu Pro
 210 215 220
 Ala Leu Ile Arg Arg Gin Phe Ala Lys Glu Leu Gly Ala Glu Val Phe
 225 230 235 240
 Asp Pro Ser Thr Cys Asp Asp Ala Asn Ala Val Leu Lys Ala Met Val
 245 250 255
 Pro Glu Asn Glu Gly Phe His Ala Ala Phe Asp Cys Ser Gly Val Pro
 260 265 270
 Gin Thr Phe Thr Thr Ser Ile Val Ala Thr Gly Pro Ser Gly Ile Ala
 275 280 285
 Val Asn Val Ala Val Trp Gly Asp His Pro Ile Gly Phe Met Pro Met
 290 295 300

Ser Leu Thr Tyr Gln Glu Lys Tyr Ala Thr Gly Ser Met Cys Tyr Thr
 305 310 315 320

Val Lys Asp Phe Gln Glu Val Val Lys Ala Leu Glu Asp Gly Leu Ile
 325 330 335

Ser Leu Asp Lys Ala Arg Lys Met Ile Thr Gly Lys Val His Leu Lys
 340 345 350

Asp Gly Val Glu Lys Gly Phe Lys Gln Leu Ile Glu His Lys Glu Asn
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Asn Val Lys Ile Leu Val Thr Pro Asn Glu Val Ser
 370 375 380

<210> 3

<211> 10

<212> PRT

<213> *Pichia angusta*

<400> 3

Lys Pro Gly Asp Arg Val Ala Val Glu Ala

1 5 10

<210> 4

<211> 21

<212> PRT

<213> *Pichia angusta*

<400> 4

Ala Thr Ser His Cys Ser Asp Arg Ser Arg Tyr Lys Asp Thr Val Ala

1 5 10 15

Gln Asp Leu Gly Leu

20

<210> 5

<211> 6

<212> PRT

<213> Pichia angusta

<400> 5

Phe His Ala Ala Phe Asp

1

5

<210> 6

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: an artificially synthesized primer sequence

<220>

<221> misc_feature

<222> 6, 9, 15, 18

<223> n is a or c or g or t.

<400> 6

aarccnggng aymgngtngc

20

<210> 7

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: an artificially synthesized primer sequence

<220>

<221> misc_feature

<222> 9, 12

<223> n is a or c or g or t.

<400> 7

tcrtcraang cngcrtgraa

20

<210> 8

<211> 530

<212> DNA

<213> Pichia angusta

<400> 8

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 tgctgtgcgt cgctgagctt ctgcggttt ggtggtgcca gccggcggtt tgccgactac 180
 gtctttacg gtgaggacca catggtaag ctgcgcact cgattcccgaa cgatattgga 240
 gcaactggttt agcattttc tggccctgg catgctgtt aacgcgttag attccagcct 300
 ggtcagacgg ccctggtttct tggaggaggt cctatggcc ttgccaccat tttgtcttg 360
 caaggccatc atgcgggcaa aatttgtgtt tccgagccgg ctttgatcgaa aagacagttt 420
 gcaaaggaaac tggcgctga agtgttcat cttctacat gtgacgacgc aatgtgtt 480
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<210> 9

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:an artificially synthesized primer sequence

<400> 9

ttggcatgcg atctgtcgga gcaatg

26

<210> 10

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:an artificially synthesized primer sequence

<400> 10

tgagccatca aatgctgttc tcaaggc

27

<210> 11

<211> 107

<212> DNA

<213> Pichia angusta

<400> 11

gaattttagcg gaacgggtggt cgagggtggc tctgggtgtca caagtgtgaa acctggtgac 60
agagtcgcag ttgaagctac gtcgcattgc tccgacagat cgcatgc 107

<210> 12

<211> 706

<212> DNA

<213> Pichia angusta

400 > 12
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cgactgctct ggtgttctc agacattcac cacctcaatt gtogccacgg gaccttctgg 120
aatcgccgtc aatgtggccg tttggggaga ccacccaatt ggattcatgc caatgtct 180
gacttaccag gagaataacg ctacccgctc catgtctac accgtcaagg acttccagga 240
agttgtcaag gccttggaaat atggctcat atcttggac aaagcgcgca agatgattac 300
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ggagaacaat gtcaagatcc tggtgacgcc gaacgaggtt tcctaactaa taatatacat 420
acatcataaca tatgtatgtc ctagagccaa gactgcgcga ttagaaaaaa tagctggtag 480
tttgcattat ggtggccggc ctcccaggaa attaatctat gatttacata tggactcgat 540
tagcttaacag gtgctgagca tttataattt acctactatt ttctaaattt gtaaaatttga 600
tgtttcttga gcaggaggag atactagac aatttcaaaa catctccaaat tgccaaatcc 660
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706

〈210〉 13

<211> 620

<212> DNA

<213> *Pichia angusta*

<400> 13

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gaatTTTccg cgcttaatcca gtcaacggta acaagaccag gatggagTTT gaatatttct 180
ttgacggcag cgatgaggag ttcgaggcct acttcaaggT tgccagacag gtcgcactcg 240
aggatatttgc gctgtgttag gcccggcaac agaaccttat aagtgggtg taccaacagg 300
gcttgcgtca tcctaaaaaa gaagtcgggg tggTTacta ccagtgcgtg gttcgtgaaa 360
gaataatggc tttagctccga gatgtggagg cagtctggtc agactgtgcg gcaattaaat 420
aagacgcgga tgtactgcac cagagtgaat aaaggaattc caattcgata gcaaatattg 480
ctgtataat gagtgaccag atttattacc gaacctagcc agcccggggt ttttacaca 540
ataggaaaaa aaggactcga ttattcgatg ctgtgcaaa tcacgccaga cataataagt 600
caccgcgtta ctccgcattgc 620

620

<210> 14

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:an artificially synthesized primer sequence

<400> 14

tgcctgcagc gccagacata ataagtccacc

30

<210> 15

<211> 523

<212> DNA

<213> Pichia angusta

<400> 15

ctgcagcggcc agacataata agtcacccgt ttactccgca tgcaactcccc cactgatcat 60
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 gaaaaattgc cggcactcggt ttgtgagaga ttatcctata taaaccacaa aatcctatct 180
 ccctttgcc aatgaaagggt ttactttatt acggtaaaaa cgtatccgc tactccgaaa 240
 cggttctgtga accggagatc aagaatccca acgtatgtcaa gatcaaagtc agctattgtg 300
 gaatctgtgg cacggacttg aaagaattca catattctgg aggtcctgtt tttttcccta 360
 aacaaggcac caaggacaag atttcggat acgaacttcc tctctgtct ggacatgaat 420
 ttacggcgaac ggtggtcgag gttggctctg gtgtcacaag tgtgaaacct ggtgacagag 480
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<210> 16

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:an artificially synthesized primer sequence

<400> 16

tgctcatgaa aggttactt tattacggt

30

<210> 17

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:an artificially
synthesized primer sequence

<400> 17

cagtctagat tagaaacct cgttcggc

28